IN THE CLAIMS:

1. (currently amended) An assembly for purifying a fluid comprising a rotatable centrifuge, a purifying chamber in said centrifuge, filter structure in said purifying chamber for removing contaminants from the fluid, said filter structure comprising a stack of alternately arranged arcuately shaped dialysate membranes and arcuately shaped plates, a fluid supply line communicating with said purifying chamber for sup-plying the fluid to be purified, a fluid discharge line communicating with said purifying chamber for removing purified fluid from said purifying chamber, and a contaminant discharge line communicating with said purifying chamber for discharging the contaminants removed from the fluid.

2. (previously presented) The assembly of claim 1 including a purifying fluid supply line communicating with said purifying chamber.

3. (canceled)

4. (currently amended) The assembly of claim [[3]] 20 including a manifold mounted in said centrifuge, said supply lines and said discharge lines leading to and communicating with said manifold and said manifold having

supply lines and discharge lines communicating with each of said modules.

5. (previously presented) The assembly of claim 4 wherein said manifold includes a plurality of co-axially aligned disks, each of said disks having a plurality of passages which are alignable with passages of the other of said disks whereby a flow passage may selectively be created between said supply and discharge lines entering said manifold, and said supply and discharge lines connecting said manifold with said modules.

6. (previously presented) The assembly of claim 5 wherein a separate one of each of said disks functions to distribute the fluid for a separate one of said supply lines and discharge lines.

7. (previously presented) The assembly of claim 6 wherein said disks are identical to each other.

8. (previously presented) The assembly of claim 7 wherein said disks includes indicating structure to facilitate proper alignment of said disks.

9. (previously presented) The assembly of claim 4 wherein each of said modules comprises a closed chamber having an arcuate inner wall and a coarcuate outer wall, said inlet for said fluid supply line being located in said inner wall opposite said outlet for said fluid discharge line in said inner wall, and said inlet for said purifying

fluid supply line being located in said inner wall opposite said outlet for said contaminant discharge line in said inner wall.

10. (previously presented) The assembly of claim 9 wherein said filter structure is a stack of alternately arranged dialysate plates and membranes.

11. (previously presented) The assembly of claim 10 wherein each of said modules is formed from a first shell member peripherally connected to a second shell member, said inner wall being part of said first shell member, said outer wall being part of said second shell member, and each of said plates having a hole in line with said outlet for said fluid discharge line.

12. (previously presented) The assembly of claim 11 wherein said outer wall has an access opening in line with said holes in said membranes, and a closure closing said access opening.

13. (previously presented) The assembly of claim 10 wherein said stack of plates and membranes includes a plurality of plates arranged in spaced parallel relationship with one of said membranes between each pair of plates to form a chamber on each side of said one membrane, one of said chambers being a blood flow chamber and the other of said chambers being a dialysate flow chamber, one of said pair of plates having a blood side disposed toward said blood

flow chamber, said blood side having a longitudinal central portion with blood channels extending laterally across said central portion, a longitudinal edge portion on each side of said central portion, said edge portions having blood channels disposed longitudinally generally perpendicular to said lateral blood channels, a blood inlet communicating with one of said edge portions, a blood outlet communicating with the other of said edge portions, said other of said pair of plates being disposed toward said dialysate flow chamber and having a dialysate flow side, said dialysate flow side having a central portion with longitudinal dialysate flow channels, a cover located between said pair of plates at said longitudinal edge portions at each longitudinal side of said membrane, and said stack of plates and membranes and covers being sealed in a respective one of said modules.

14. (previously presented) The assembly of claim 13 wherein said longitudinal dialysate flow channels have a sawtooth flow pattern, each of said plates having flow channels at each end thereof on each side of said plate, said flow channels at one end being in a centrally located set, said flow channels at the other end being in two spaced sets, holes extending through said plate to create communication between said flow channels on each side of

said plate whereby dialysate may flow through said plate and enter said two spaced sets of flow channels and then flow through said longitudinal flow channels and then into said centrally located set of flow channels, and each of said plates being disposed in a position rotated 180^0 with respect to its adjacent plate.

15. (previously presented) The assembly of claim 4 wherein said manifold includes a plurality of co-axially aligned disks, each of said disks having a plurality of passages which are alignable with passages of the other of said disks whereby a flow passage may selectively be created between said supply and discharge lines entering said manifold and said supply and discharge lines connecting said manifold with said modules.

16. (previously presented) The assembly of claim 15 wherein a separate one of each of said disks functions to distribute the fluid for a separate one of said supply lines and discharge lines.

17. (currently amended) The assembly of claim [[3]] 20 wherein there are four of said modules forming a 360^0 arc.

18. (currently amended) The assembly of claim 2 wherein said assembly is used for purifying blood, and said fluid supply line feeding whole blood said fluid discharge line feeding purified blood said contaminant discharge line

feeding contaminants removed from the blood said purifying fluid feeding dialysate~~, and said filter structure being a stack of parallel membranes~~.

19. (currently amended) The assembly of claim 1 wherein said assembly is used for purifying blood, said fluid supply line feeding whole blood, said fluid discharge line feeding purified blood, said contaminant discharge line feeding contaminants removed from the blood, and said purifying fluid supply line feeding dialysate~~, and said filter structure being a stack of parallel membranes~~.

20. (currently amended) ~~The assembly of claim 1 wherein~~ An assembly for purifying a fluid comprising a rotatable centrifuge, a purifying chamber in said centrifuge, filter structure in said purifying chamber for removing contaminants from the fluid, a fluid supply line communicating with said purifying chamber for supplying the fluid to be purified, a fluid discharge line communicating with said purifying chamber for removing purified fluid from said purifying chamber, and a contaminant discharge line communicating with said purifying chamber for discharging the contaminants removed from the fluid, said purifying chamber comprises a plurality of co-arcuately aligned modules mounted in said centrifuge, and each of said modules having separate inlets for connection to said fluid supply line and said

purifying fluid supply line and separate outlets for each of said fluid discharge line and said contaminant discharge line.

21. (previously presented) The assembly of claim 20 including a manifold mounted in said centrifuge, said supply lines and said discharge lines leading to and communicating with said manifold, and said manifold having supply lines and discharge lines communicating with each of said modules.

22. (currently amended) The assembly of claim 1 wherein ~~said filter structure is a stack of alternately arranged dialysate plates and membranes,~~ said stack of plates and membranes including a plurality of plates arranged in spaced parallel relation-ship with one of said membranes between each pair of plates to form a chamber on each side of said one membrane, one of said chambers being a blood flow chamber and the other of said chambers being a dialysate flow chamber, one of said pair of plates having a blood side disposed toward said blood flow chamber, said blood side having a longitudinal central portion with blood channels extending later-ally across said central portion, a longitudinal edge portion on each side of said central portion, said edge portions having blood channels disposed longitudinally generally perpendicular to said lateral blood channels, a blood

inlet communicating with one of said edge portions, a blood outlet communicating with the other of said edge portions, said other of said pair of plates being disposed toward said dialysate flow chamber and having a dialysate flow side, said dialysate flow side having a central portion with longitudinal dialysate flow channels, a cover located between said pair of plates at said longitudinal edge portions at each longitudinal side of said membrane, and said stack of plates and membranes and covers being sealed in a respective one of said modules.

23. (currently amended) A dialyzer for purifying blood comprising a module having a stack of alternately arranged <u>arcuately shaped</u> dialysate plates and <u>arcuately shaped</u> membranes, said stack of plates and membranes including a plurality of plates arranged in spaced parallel relation-ship with one of said membranes between each pair of plates to form a chamber on each side of said one membrane, one of said chambers being a blood flow chamber and the other of said chambers being a dialysate flow chamber, one of said pair of plates having a blood side disposed toward said blood flow chamber, said blood side having a longitudinal central portion with blood channels extending laterally across said central portion, a longitudinal edge portion on each side

of said central portion, said edge portions having blood channels disposed longitudinally generally perpendicular to said lateral blood channels, a blood inlet communicating with one of said edge portions, a blood outlet communicating with the other of said edge portions, said other of said pair of plates being disposed toward said dialysate flow chamber and having a dialysate flow side, said dialysate flow side having a central portion with longitudinal dialysate flow channels, a cover located between said pair of plates at said longitudinal edge portions at each longitudinal side of said membrane, and said stack of plates and membranes and covers being sealed in said module.

24. (currently amended) ~~The dialyzer of claim 23 wherein~~ A dialyzer for purifying blood comprising a module having a stack of alternately arranged dialysate plates and said stack of plates and membranes including a plurality of plates arranged in spaced parallel relationship with one of said membranes between each pair of plates to form a chamber on each side of said one membrane, one of said chambers being a blood flow chamber and the other of said chambers being a dialysate flow chamber, one of said pair of plates having a blood side disposed toward said blood flow chamber, said blood side having a longitudinal central portion with blood channels extending laterally

across said central portion, a longitudinal edge portion on each side of said central portion, said edge portions having blood channels disposed longitudinally generally perpendicular to said lateral blood channels, a blood inlet communicating with one of said edge portions, a blood outlet communicating with the other of said edge portions, said other of said pair of plates being disposed toward said dialysate flow chamber and having a dialysate flow side, said dialysate flow side having a central portion with longitudinal dialysate flow channels, a cover located between said pair of plates at said longitudinal edge portions at each longitudinal side of said membrane, said stack of plates and membranes and covers being sealed in said module, said longitudinal dialysate flow channels ~~have~~ having a sawtooth flow pattern, each of said plates having flow channels at each end thereof on each side of said plate, said flow channels at one end being in a centrally located set, said flow channels at the other end being in two spaced sets, holes extending through said plate to create communication between said flow channels on each side of said plate whereby dialysate may flow through said plate and enter said two spaced sets of flow channels and then flow through said longitudinal flow channel and then into said centrally located set of flow channels, and each of

said plates being disposed in a position rotated 180^0 with respect to its adjacent plate.

25. (canceled)

26. (canceled)

27. ~~The method of claim 26~~ A method of purifying a fluid comprising supplying the fluid to be purified into a purifying chamber in a centrifuge, disposing filter structure in the centrifuge, rotating the centrifuge to separate lighter components of the fluid from heavier components of the fluid, filtering contaminants from the heaver components of the fluid by passing the heavier components of the fluid through the filter structure, discharging the purified fluid from the centrifuge, discharging the contaminants from the centrifuge, wherein the fluid to be purified is blood and the filter structure is a stack of dialysate membranes, the lighter components of the fluid being the cells of the blood and the heavier components being the plasma, feeding fresh dialysate into the purifying chamber to remove contaminants from the plasma, discharging the used dialysate with the contaminants which have been removed from the plasma, wherein the purifying chamber is in the form of a plurality of co-arcuately arranged modules, feeding the whole blood and the dialysate into a manifold and then to the modules, and removing the purified blood

and used dialysate/contaminants from the modules to the manifold and out of the centrifuge.

28. (previously presented) The method of claim 27 wherein the manifold includes a plurality of coaxially aligned disks having alignable passageways, and utilizing a separate disk to distribute the whole blood to the modules and a further separate disk to distribute the dialysate to the modules and a further separate disk to collect and discharge the purified blood and a further separate disk to collect and discharge the used dialysate/contaminants.

29. (previously presented) The method of claim 28 wherein the whole blood is removed from a patient through a catheter and the purified blood is fed into the patient through the catheter on a continuous basis.

30. (presently amended) The method of claim [[26]] 27 wherein the blood is removed from a patient and supplied to the centrifuge through a supply tube, the purified blood being returned from the centrifuge to the patient through a discharge tube, periodically cutting through and sealing the supply tube and the discharge tube by a sterile connection device, and reconnecting and opening the sealed supply tube and discharge tube from the patient to a corresponding supply tube and discharge tube from the centrifuge by a sterile connection device.

31. (newly presented) The assembly of claim 19 wherein all of said membranes and plates are parallel with each other.

32. (newly presented) The assembly of claim 31 wherein said curved plates and membranes are stacked in a manner that creates a plurality of individual layers having the lightest components of the fluid on top and the heaviest components on the bottom whereby blood cells may separate from plasma without contacting the dialysis membrane while allowing urea contained in the plasma to pass through the dialysis membrane.

REMARKS:

This application has been carefully studied and amended in view of the Office Action dated July 30, 2003. Reconsideration of that action is requested in view of the following.

Claim 23 has been amended at line 8 to add a comma after "membrane". As now amended claim 23 should comply with 35 USC § 112. Similarly, claim 24 which was dependent on claim 23 has been written in independent form and includes the same amendment. Accordingly, claim 24 should also comply with 35 USC § 112.

The indication of allowability of claims 3-17, 20-21 and 27-29 is noted with appreciation. Similarly, the indication of allowability of claim 24 is likewise noted with appreciation. In view of the indication of allowability of the various claims a number of claims have been written in independent form. Specifically, there are now five independent claims. These are claims 1 and 23 which had been rejected over the prior art and claims 20, 24 and 27 which had been indicated as being allowable. Although claim 23 had been indicated as being allowable the subject matter added by claim 3 is the same as in claim 20, except that claim 20 was dependent directly on claim 1 whereas claim 3 was dependent on claim 1 by also being dependent on claim 2. Since the subject matter of claims 3 and 20 were quite similar, claim 3 has been canceled and claim 4 which was dependent on claim 3 has been made dependent on claim 20.

Claims 3, 25 and 26 have been canceled. Claims 31 and 32 have been added which are dependent directly or indirectly on claim 19. There are now a total of five independent claims. Accordingly a supplemental fee of $84.00 is submitted with regard to the two independent claims in excess of three.

The only claims now pending which have not previously been indicated as being allowable are claims 1-2, 18-19, 22, 23 and newly added claims 31-32. Claims 2, 18, 19, 22 and 31-32 are dependent directly or indirectly on claim 1. Claim 23 is an independent claim and has no dependent claims.

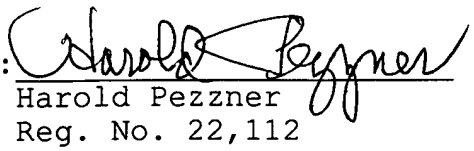
It is respectfully submitted that parent claim 1 and its dependent claims 2, 18-19, 22 and 31-32 are patentable over the prior art and particularly over Ameer. As now amended claim 1 defines an assembly for purifying fluid wherein the filter structure comprises a stack of alternately arranged arcuately shaped dialysate membranes and arcuately shaped plates which are arranged in a rotatable centrifuge. Ameer uses an inner rotating cylinder to produce "Taylor Vortices" and rotating currents to generate centrifical and shear forces within the blood itself. This is not a centrifuge in the classic sense which is in contrast with the claimed assembly having a centrifuge that truly spins the entire dialysis module. Thus, claim 1 recites the stack of curved shaped membranes and plates as being the filter structure which is structure not present in Ameer.

It is further submitted that independent claim 23 is patentable over the prior art and particularly over Iaconelli. Claim 23 has now been amended to point out that the stack of plates and membranes comprises arcuately shaped plates and membranes. This is a feature lacking in Iaconelli where the various components are not of a curved or arched shape as discussed above. This is a feature which is unique to a parallel plate dialyzer.

Speaking in general terms the present invention has provided for the first time a combination of parallel plate dialysis and centrifugal separation. A feature of the parallel plate dialyzer that is unique is that it is in the form of an arch and that the stack up of curved plates and membranes can thereby be arranged in a specific order to take advantage of the centrifugal forces produced when the dialyzer module is spun. The plates and membranes can be stacked in a manner that creates many individual layers where the lightest components remain on top and the heaviest components remain on the bottom, i.e. dialysate on top, membrane in the middle and blood on the bottom. This arrangement allows the blood cells to separate from the plasma and not contact the dialysis membrane while allowing the urea contained in the plasma to pass through the membrane as in normal dialysis.

In view of the above remarks and amendments this application should be passed to issue.

Respectfully Submitted,
CONNOLLY BOVE LODGE & HUTZ LLP

BY: 

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